

CLAIMS:

1. An optical recording medium comprising a substrate, a light transmission layer and a plurality of recording layers between the substrate and the light transmission layer and capable of recording data
5 in the plurality of recording layers and reproducing data recorded in the plurality of recording layers by projecting a laser beam via the light transmission layer onto the plurality of recording layers, at least one recording layer other than a farthest recording layer from the light transmission layer among the plurality of recording layers including a
10 first recording film containing an element selected from a group consisting of Si, Ge, Sn, Mg, In, Zn, Bi and Al as a primary component and a second recording film located in the vicinity of the first recording film and containing an element selected from a group consisting of Cu, Al, Zn, Ti and Ag as a primary component.
15
2. An optical recording medium in accordance with Claim 1, wherein the first recording film contains Si as a primary component.
3. An optical recording medium in accordance with Claim 2, wherein
20 the second recording film contains Cu as a primary component.
4. An optical recording medium in accordance with Claim 3, wherein at least one element selected from the group consisting of Al, Zn, Sn, Mg and Au and different from the element contained in the second recording
25 layer as a primary component is added the second recording film.
5. An optical recording medium in accordance with Claim 4, wherein the second recording film is formed so as to be in contact with the first

recording film.

6. An optical recording medium in accordance with Claim 3, wherein the light transmission layer has a thickness of 30 μm to 200 μm .

5

7. An optical recording medium in accordance with Claim 5, wherein the light transmission layer has a thickness of 30 μm to 200 μm .

8. An optical recording medium in accordance with Claim 3 which is
10 further constituted so that data are recorded therein and data are reproduced therefrom by projecting a laser beam having a wavelength of 350 nm to 450 nm thereonto.

9. An optical recording medium in accordance with Claim 6 which is
15 further constituted so that data are recorded therein and data are reproduced therefrom by projecting a laser beam having a wavelength of 350 nm to 450 nm thereonto.

10. An optical recording medium in accordance with Claim 7 which is
20 further constituted so that data are recorded therein and data are reproduced therefrom by projecting a laser beam having a wavelength of 350 nm to 450 nm thereonto.

11. An optical recording medium in accordance with Claim 3 which is
25 further constituted so that data are recorded therein and data are reproduced therefrom by employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/\text{NA} \leq 640 \text{ nm}$, and projecting the laser beam thereonto via the objective lens.

12. An optical recording medium in accordance with Claim 6 which is further constituted so that data are recorded therein and data are reproduced therefrom by employing an objective lens and a laser beam
5 whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam thereonto via the objective lens.

13. An optical recording medium in accordance with Claim 7 which is further constituted so that data are recorded therein and data are
10 reproduced therefrom by employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam thereonto via the objective lens.

14. An optical recording medium comprising a substrate, a light
15 transmission layer and a plurality of recording layers between the substrate and the light transmission layer and capable of forming record marks in the plurality of recording layers, thereby recording data therein and reproducing data recorded in the plurality of recording layers by projecting a laser beam via the light transmission layer onto the plurality
20 of recording layers, at least one recording layer other than a farthest recording layer from the light transmission layer among the plurality of recording layers being constituted so that difference in light transmittances between a region of a record mark formed by the irradiation of the laser beam and blank regions is equal to or lower than
25 4 %.

15. An optical recording medium in accordance with Claim 14, wherein the light transmission layer has a thickness of 30 μm to 200 μm .

16. An optical recording medium in accordance with Claim 14 which is further constituted so that data are recorded therein and data are reproduced therefrom by projecting a laser beam having a wavelength of
5 350 nm to 450 nm thereonto.

17. An optical recording medium in accordance with Claim 15 which is further constituted so that data are recorded therein and data are reproduced therefrom by projecting a laser beam having a wavelength of
10 350 nm to 450 nm thereonto.

18. An optical recording medium in accordance with Claim 14 which is further constituted so that data are recorded therein and data are reproduced therefrom by employing an objective lens and a laser beam
15 whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam thereonto via the objective lens.

19. An optical recording medium in accordance with Claim 15 which is further constituted so that data are recorded therein and data are
20 reproduced therefrom by employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam thereonto via the objective lens.

20. A method for recording and reproducing data comprising the steps
25 of projecting a laser beam onto an optical recording medium comprising a substrate, a light transmission layer and a plurality of recording layers between the substrate and the light transmission layer and capable of recording data in the plurality of recording layers and reproducing data

recorded in the plurality of recording layers by projecting a laser beam via the light transmission layer onto the plurality of recording layers, at least one recording layer other than a farthest recording layer from the light transmission layer among the plurality of recording layers including a
5 first recording film containing an element selected from the group consisting of Si, Ge, Sn, Mg, In, Zn, Bi and Al as a primary component and a second recording film located in the vicinity of the first recording film and containing an element selected from a group consisting of Cu, Al, Zn, Ti and Ag as a primary component, thereby causing the laser beam to
10 pass through the light transmission layer, and recording data in the plurality of recording layers or reproducing data from the plurality of recording layers.

21. A method for recording and reproducing data in accordance with
15 Claim 20 wherein the first recording film of the optical recording medium contains Si as a primary component.

22. A method for recording and reproducing data in accordance with Claim 21 wherein the second recording film of the optical recording
20 medium contains Cu as a primary component.

23. A method for recording and reproducing data in accordance with Claim 20 which comprises a step of irradiating the optical recording medium with a laser beam having a wavelength of 350 nm to 450 nm,
25 thereby recording data in the optical recording medium or reproducing data from the optical recording medium.

24. A method for recording and reproducing data in accordance with

Claim 22 which comprises a step of irradiating the optical recording medium with a laser beam having a wavelength of 350 nm to 450 nm, thereby recording data in the optical recording medium or reproducing data from the optical recording medium.

5

25. A method for recording and reproducing data in accordance with Claim 20 which comprises a step of employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam onto the optical recording medium via the objective lens, thereby recording data in the optical recording medium or reproducing data from the optical recording medium.

26. A method for recording and reproducing data in accordance with Claim 22 which comprises a step of employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam onto the optical recording medium via the objective lens, thereby recording data in the optical recording medium or reproducing data from the optical recording medium.